

ETHANE

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CAUTIONARY RESPONSE INFORMATION

Common Synonyms Methylmethane	Liquefied compressed gas Colorless Mild gasoline-like odor
Floats and boils on water. Flammable visible vapor cloud is produced.	
<p>Evacuate. Keep people away. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Avoid contact with liquid. Notify local health and pollution control agencies.</p>	
Fire	<p>FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Stop flow of gas if possible. Cool exposed containers and protect men effecting shutoff with water. Let fire burn.</p>
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR If inhaled will cause difficult breathing. Not irritating to eyes, nose or throat. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Will cause frostbite. Flush affected areas with plenty of water. DO NOT RUB AFFECTED AREAS.</p>
Water Pollution	Not harmful.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Chemical and Physical Treatment: Burn

2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** 31; Paraffin
- 2.2 **Formula:** C₂H₆
- 2.3 **IMO/UN Designation:** 2.0/1035 (Compressed) 2.0/1961 (Refrigerated)
- 2.4 **DOT ID No.:** 1035 (Compressed) 1961 (Refrigerated)
- 2.5 **CAS Registry No.:** 74-84-0
- 2.6 **NAERG Guide No.:** 115
- 2.7 **Standard Industrial Trade Classification:** 51114

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Self-contained breathing apparatus for high vapor concentrations.
- 3.2 **Symptoms Following Exposure:** In high vapor concentrations, can act as simple asphyxiant. Liquid causes severe frostbite.
- 3.3 **Treatment of Exposure:** Remove from exposure; support respiration.
- 3.4 **TLV-TWA:** Not listed.
- 3.5 **TLV-STEL:** Not listed.
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Not pertinent
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** None
- 3.10 **Vapor (Gas) Irritant Characteristics:** Vapors are nonirritating to the eyes and throat.
- 3.11 **Liquid or Solid Characteristics:** No appreciable hazard. Practically harmless to the skin because it is very volatile and evaporates quickly.
- 3.12 **Odor Threshold:** 899 ppm
- 3.13 **IDLH Value:** Not listed.
- 3.14 **OSHA PEL-TWA:** Not listed.
- 3.15 **OSHA PEL-STEL:** Not listed.
- 3.16 **OSHA PEL-Ceiling:** Not listed.
- 3.17 **EPA AEGL:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:** -211°F
- 4.2 **Flammable Limits in Air:** 2.9%-13.0%
- 4.3 **Fire Extinguishing Agents:** Stop flow of gas
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Currently not available
- 4.5 **Special Hazards of Combustion Products:** Not pertinent
- 4.6 **Behavior in Fire:** Not pertinent
- 4.7 **Auto Ignition Temperature:** 940°F
- 4.8 **Electrical Hazards:** Class I, group D
- 4.9 **Burning Rate:** 7.3 mm/min.
- 4.10 **Adiabatic Flame Temperature:** 2394. (Est.)
- 4.11 **Stoichiometric Air to Fuel Ratio:** 16.7 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 5.0 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
- 5.2 **Reactivity with Common Materials:** No reaction
- 5.3 **Stability During Transport:** Stable
- 5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** None
- 6.2 **Waterfowl Toxicity:** None
- 6.3 **Biological Oxygen Demand (BOD):** None
- 6.4 **Food Chain Concentration Potential:** None
- 6.5 **GESAMP Hazard Profile:** Not listed

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Research; pure
- 7.2 **Storage Temperature:** -128°F
- 7.3 **Inert Atmosphere:** No requirement
- 7.4 **Venting:** Safety relief
- 7.5 **IMO Pollution Category:** Currently not available
- 7.6 **Ship Type:** 2
- 7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable gas
- 8.2 **49 CFR Class:** 2.1
- 8.3 **49 CFR Package Group:** Not pertinent.
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	1
Flammability (Red)	4
Instability (Yellow)	0
- 8.6 **EPA Reportable Quantity:** Not listed.
- 8.7 **EPA Pollution Category:** Not listed.
- 8.8 **RCRA Waste Number:** Not listed
- 8.9 **EPA FWPCA List:** Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Gas
- 9.2 **Molecular Weight:** 30.07
- 9.3 **Boiling Point at 1 atm:** -127.5°F = -88.6°C = 264.6°K
- 9.4 **Freezing Point:** -279.9°F = -183.3°C = 89.9°K
- 9.5 **Critical Temperature:** 90.1°F = 32.3°C = 305.5°K
- 9.6 **Critical Pressure:** 708.0 psia = 48.16 atm = 4.879 MN/m²
- 9.7 **Specific Gravity:** 0.546 at -88.6°C (liquid)
- 9.8 **Liquid Surface Tension:** 16 dynes/cm = 0.016 N/m at -88°C
- 9.9 **Liquid Water Interfacial Tension:** (est.) 45 dynes/cm = 0.045 N/m at -88°C
- 9.10 **Vapor (Gas) Specific Gravity:** 1.1
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.191
- 9.12 **Latent Heat of Vaporization:** 211 Btu/lb = 117 cal/g = 4.90 X 10⁵ J/kg
- 9.13 **Heat of Combustion:** -20,293 Btu/lb = -11,274 cal/g = -472.02 X 10⁵ J/kg
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** Not pertinent
- 9.16 **Heat of Polymerization:** Not pertinent
- 9.17 **Heat of Fusion:** 22.73 cal/g
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** Very high

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
-145	34.760	-270	0.546		N		C
-140	34.530	-260	0.549		O		U
-135	34.310	-250	0.552		T		R
-130	34.080	-240	0.554				E
		-230	0.557		P		N
		-220	0.560		E		T
		-210	0.563		R		L
		-200	0.565		T		L
		-190	0.568		I		Y
		-180	0.571		N		
		-170	0.574		E		N
		-160	0.577		N		O
		-150	0.579		T		T
		-140	0.582				
		-130	0.585				A
							V
							A
							I
							L
							A
							B
							L
							E

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	N	-165	4.090	-165	0.03888	0	0.378
	O	-160	4.934	-160	0.04612	25	0.390
	T	-155	5.916	-155	0.05439	50	0.403
		-150	7.051	-150	0.06379	75	0.415
	P	-145	8.359	-145	0.07441	100	0.428
	E	-140	9.856	-140	0.08636	125	0.440
	R	-135	11.560	-135	0.09976	150	0.453
	T	-130	13.500	-130	0.11470	175	0.465
	I	-125	15.690	-125	0.13130	200	0.477
	N	-120	18.150	-120	0.14970	225	0.490
	E	-115	20.910	-115	0.16990	250	0.502
	N	-110	23.990	-110	0.19220	275	0.515
	T	-105	27.420	-105	0.21660	300	0.527
		-100	31.220	-100	0.24320	325	0.540
		-95	35.430	-95	0.27210	350	0.552
		-90	40.060	-90	0.30360	375	0.564
		-85	45.150	-85	0.33760	400	0.577
		-80	50.730	-80	0.37430	425	0.589
		-75	56.830	-75	0.41380	450	0.602
		-70	63.470	-70	0.45630	475	0.614
		-65	70.690	-65	0.50180	500	0.627
		-60	78.530	-60	0.55040	525	0.639
						550	0.651
						575	0.664
						600	0.676